

CLAIMS

1. A lens array unit comprising:

5 a first lens array provided with a plurality of first convex lenses and a first transparent holder formed integral with the first lenses, each of the first lenses having first and second lens surfaces;

10 a second lens array provided with a plurality of second convex lenses and a second transparent holder formed integral with the second lenses, each of the second lenses having third and fourth lens surfaces, the second lens array being attached to the first lens array so that the third lens surfaces face the second lens surfaces; and

15 a light shield mounted on the first lens array and provided with a plurality of through-holes facing the first lens surfaces.

2. The lens array unit according to claim 1, wherein the first and second lens arrays cooperate to form a non-inverted and
20 non-magnified image of an object.

3. The lens array unit according to claim 1, wherein each of the through-holes has a dark-colored inner wall surface.

25 4. The lens array unit according to claim 3, wherein the light shield is made of a dark-colored resin material.

5. The lens array unit according to claim 1, wherein the light shield and the first lens array are provided with engaging means including a recess and a projection fitted into the recess.

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6. The lens array unit according to claim 1, wherein the light shield is attached to the first lens array in a stretched state.

10 7. The lens array unit according to claim 1, wherein the light shield includes a plurality of segments connected to extend in a predetermined direction.

15 8. The lens array unit according to claim 7, wherein adjacent ones of the segments overlap with each other in a thickness direction perpendicular to said predetermined direction.

9. The lens array unit according to claim 7, wherein the segments are equal in configuration and size to each other.

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10. The lens array unit according to claim 1, wherein each of the first lens surfaces is convex and at least partially projects into a relevant one of the through-holes of the light shield.

11. The lens array unit according to claim 1, wherein the first lens surfaces are diametrically greater than the through-holes of the light shield.

5 12. A lens array unit comprising:

a lens array provided with a plurality of lenses and a transparent holder formed integral with the lenses, each of the lenses having first and second lens surfaces; and

a light shield formed with a plurality of through-holes facing the first lens surfaces.

13. A lens array unit comprising:

a first lens array provided with a plurality of first convex lenses arranged in a line, each of the first lenses having first and second lens surfaces;

a second lens array provided with a plurality of second convex lenses arranged in a line, each of the second lenses having third and fourth lens surfaces, the second lens array being attached to the first lens array so that the third lens surfaces face the second lens surfaces; and

light shielding means for partially covering at least either one of the third and the fourth lens surfaces of each second lens.

14. The lens array unit according to claim 13, wherein the light shielding means comprises a dark-colored layer formed directly on at least either one of the third and the fourth lens surfaces of each second lens.

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15. The lens array unit according to claim 13, wherein the first lens array is formed with grooves for optically separating the first lenses from each other, each of the grooves being provided with a dark-colored light shielding

10 member.

16. The lens array unit according to claim 13, wherein each of the first and the second lens arrays is provided with a holder formed integral with the convex lenses.

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17. The lens array unit according to claim 16, wherein the holder of the first lens array includes obverse and reverse surfaces spaced from each other in an axial direction of the first lenses, the obverse and the reverse surfaces being

20 covered with light shielding means.

18. The lens array unit according to claim 16, wherein the holder of the second lens array includes obverse and reverse surfaces spaced from each other in an axial direction of the second lenses, at least either one of the obverse and the reverse surfaces being covered with light shielding means.

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19. A lens array comprising:

a plurality of lenses arranged in a line and each having a lens surface; and

light shielding means for partially covering the lens
5 surface;

wherein the lens surface includes peripheral portions spaced from each other along said line, the light shielding means covering the peripheral portions.

10 20. A method of forming an image of an object, the method comprising the steps of:

preparing a lens array unit which includes a first lens array provided with first lenses and a second lens array provided with second lenses, the first lens array being
15 arranged closer to said object than the second lens array is, each of the second lenses having a light inlet surface and a light outlet surface; and

partially shielding at least either one of the light inlet surface and the light outlet surface for adjusting
20 brightness of light spots formed along a predetermined focal line.